INVICTA

The Most Wonderful
Performance in the World

Service Station:
11, ALPHA PLACE, FLOOD STREET,
CHELSEA, S.W.3

INVICTA CARS
Works and Office:
THE FAIRMILE, COBHAM, SURREY

Telephones:
COBHAM 400–1–2
Service: FLAXMAN 9486.

SPECIFICATIONS

(4½ Litre Standard, Sports and Special Sports Chassis)

4½ LITRE STANDARD

Chassis and Engine Dimensions.—Number of Cylinders, 6; Bore and stroke, 88.5 m.m. by 120.64 m.m. Cubic capacity, 4,467 c.c. Treasury rating, 29.12 h.p. Tax, £30. Wheelbase, 10 ft. 6 in.; Track, 4 ft. 8 in. Overall length, 14 ft. 9 in. Overall width of complete car, 5 ft. 8 in. Ground clearance, 8½ in. Size of tyres, 31 in. × 6 in. Approximate weight of chassis only, 25 cwt. Petrol tanks capacity, 19½ gallons.

Frame.—Of special design upswept both front and rear, giving low centre of gravity. The side members of deep and wide section are braced together by three very deep channel cross members and three large diameter tubular members.

Axles.—Are exceptionally strong and of heavy section. The rear axle is the banjo type, enclosing special spiral cut bevels and very large diameter axle shafts of great strength.

Brakes.—Direct acting with separate adjustment to each wheel. Footbrake operates on all four wheels. The hand brake operates separate shoes on rear wheels. Aluminium cooling fins are fitted on each brake drum.

Steering.—The mechanism is of the latest Marles design, the steering column being well raked and fitted with an 18 in. steering wheel.

Tyres and Wheels.—Rudge-Whitworth detachable wire wheels fitted with 31 in. × 6 in. tyres, and chromium plated lock rings.

Suspension.—By very long and wide semi-elliptic springs the free ends of which work in special design sliding trunnions and double acting shock-absorbers.

Engine.—Six cylinders cast *en bloc*. Bore 88.5 m.m. or 3.464 in. Stroke 120.64 m.m. or 4.75 in. Cubic capacity 4,467.26 c.c., or 272.5 cubic ins. Treasury rating, 29.124; annual tax, £30. Crankshaft carried on four bearings of exceptionally large diameter. Overhead valves of large diameter operated by push rods and rocker mechanism. Ignition by magneto and coil synchronised, but entirely independent of each other, and with two sets of sparking plugs. Carburettors; 2 S.U.'s with balance pipe between, and one starting carburettor controlled from instrument board. High pressure force feed lubrication to big ends and main bearings, and valve rocker gear. Oil pressure controlled by a safety valve and an oil pressure regulator. The Engine is mounted on silentbloc bearings.

Clutch.—Single dry plate. Adjustable clutch stop. Clutch thrust race can be lubricated from outside of case whilst engine is running.

Cooling.—By large centrifugal pump fitted with self-sealing gland and exceptionally efficient chromium-plated honeycomb radiator, the temperature being controlled by a thermostat fitted between cylinder outlet and inlet to radiator.

Gear-Box.—Unit construction with Engine, fitted with ground gears. Right hand gate change; four forward speeds, and reverse. Ratios: 3.9; 5.2; 7.5; 11.3; and 13-1 reverse. Speeds: Top, 80/85 m.p.h.; 3rd, 65 m.p.h.; 2nd, 40 m.p.h.; 1st, 20 m.p.h.

Drive and Torque.—"Hotchkiss" drive through the springs only is used. Metal universal joints running in oil which need attention once every 20,000 miles.

Chassis Lubrication.—By "Enot's" Autoram gun.

Fuel Supply.—By Autovac supplied from 17 gallon main tank at rear of classis, and 1½ gallon gravity feed auxiliary tank on dash. Petrol taps on instrument board. A reserve oil supply tank of one gallon capacity is combined with the auxiliary petrol tank and is controlled by a tap under the bonnet.

Controls.—Finger tip type situated on top of steering column and comprising ignition, throttle and lighting levers, and horn and starter button of the push-pull type.

Electrical Equipment.—12-volt single pole system. Large twin batteries and very efficient and powerful starter motor. Lamp switches, head light dipping reflector switch and charge control combined on one lever on top of steering column. Horn and starter button switch located in centre of steering wheel on top of steering column, which when pressed down operates the horn, and when pulled up operates the starter.

Tools.—A complete kit of tools, including pump, jack and "Enot's" Autoram gun is supplied.

Instruments.—Are grouped on a black central panel with concealed lighting and consists of clock, speedometer, ammeter, petrol gauge, oil gauge, water temperature gauge. Ignition switches with tell-tale lamps for coil ignition, charging pin plug, petrol taps, starting carburetter knob and dynamo fuse are also mounted on this panel. Engine inspection lamp, fitted to dash under bonnet on offside of engine. Two head lamps, two wing lamps, chromium plated. One combined tail and stop lamp, one electric horn and electric screen wiper.

4½ LITRE SPORTS MODEL

The specification of the Sports Chassis is identical with the Standard model, with the following exceptions:—

Frame.—Specially designed low built dropped frame upswept at front, and underslung beneath rear axle. Overall length 13 ft. 6 in., overall width 5 ft. 6 in. Wheelbase 9 ft. 10 in. Track 4 ft. 8 in.

Springs.—Special springs with damper leaves above main leaves.

Radiator and Dash.—Specially designed to obtain the minimum overall height.

Gear Ratios.—Forward 3.6, 4.9, 7 and 10.4 to 1. Reverse 12 to 1.

Fuel Supply.—By automatic petrol pump, to 20 gallon tank at rear of chassis.

Special Extras.—Scintilla Magneto and coil ignition systems, also Solex or Amal carburettors can be supplied at extra cost.

The 5 Litre Supercharged Special Sports

THE supremacy of British cars in reliability and Alpine performance is established and a long series of international successes, gained in competition with all the most famous makes in the world and culminating in the recent Alpine Trials, justifies Invicta Cars in claiming a considerable share in that supremacy.

It is, however, held in some quarters that in purely speed racing events the predominance still lies with foreign cars. With the object of challenging this alleged predominance and relying not only on their own experience but of that of well-known experts in the racing world, Invicta Cars have decided to produce side by side with their established range, a racing sports car.

No expense or ingenuity has been spared in evolving this all British product into a car which it is confidently believed will place British supremacy on both road and track beyond dispute. At the same time it introduces an innovation in that it is designed as to chassis and engine both as a sports car for use in International Reliability Trials or even touring work, and as a racing vehicle capable of competing on level terms in International Road and Track Events, with any foreign car at present produced.

SPECIFICATION

Chassis and Engine Dimensions.—Six cylinders, 93 m.m. bore by 120 m.m. stroke giving cubic capacity of 4,890.9 c.c. Treasury rating 32.17 h.p. Tax £33. Wheelbase 9 ft. 10 in. Track 4 ft. 9 in. Overall length 15 ft. Overall width of complete car 5 ft. 9 in. Ground clearance 6 in. Size of tyres 32 in. × 6.50 in. Approximate weight of complete car with standardized 4-seater body 26 cwt. Petrol tank capacity 20 gallons.

Engine.—The engine is in general lay-out similar to the previous 4½-litre model, but is fitted with a new designed cylinder head and block, which is fitted with two overhead camshafts ; each camshaft operating two exhaust valves per cylinder and one inlet valve per cylinder. The supercharger is mounted directly on the front of the engine in front of the timing gear.

Gear-box.—A specially designed 5-speed Wilson pre-selective gear-box is fitted, the lubrication of which is automatic by its own oil pump, and arrangements are made for proper cooling of the lubricant.

Frame.—The frame is of very great strength, the side members being very deep and very wide in section. They are braced together by six channel cross members, and in the centre of the chassis there is a cruciform cross member extending from the front of the rear springs to the rear of the front springs. In spite of the massive appearance of the chassis frame, it has been possible to make use of suitable material to very considerably reduce the weight of this component.

Axles.—The front axle is a new design, giving adequate strength and of heavy H. section. The rear axle is a semi-floating spiral bevel embodying many improvements over the existing 4½-litre axle.

Springs.—Both front and rear springs are mounted outside the chassis and are secured to the frame by very rigid attachments, the bearing areas in the shackles being exceptionally large.

Brakes.—A specially designed Lockheed Hydraulic system is used, working on 16 in. diameter brake drums, and the brake torque re-action is taken by suitable torque rods fitted between the axles and the chassis frame.

Steering.—Steering is of the latest "Marles" design, and has been very carefully laid out in view of the high speed capabilities of the car.

Wheels and Tyres.—Special Rudge-Whitworth wire wheels are fitted with knock-off lock nuts and are fitted with 32 in. × 6.50 in. tyres.

Fuel Supply.—The fuel supply is by electric fuel pump from a 20 gallon tank at the rear of the chassis.

Controls.—The finger tip type situated on top of the steering column and comprising, ignition, throttle, and lighting levers, horn, and starter button of the push-pull type. The gear selector lever is also fitted below the steering wheel, convenient for the right hand.

Electrical Equipment.—See existing 4½-litre equipment.

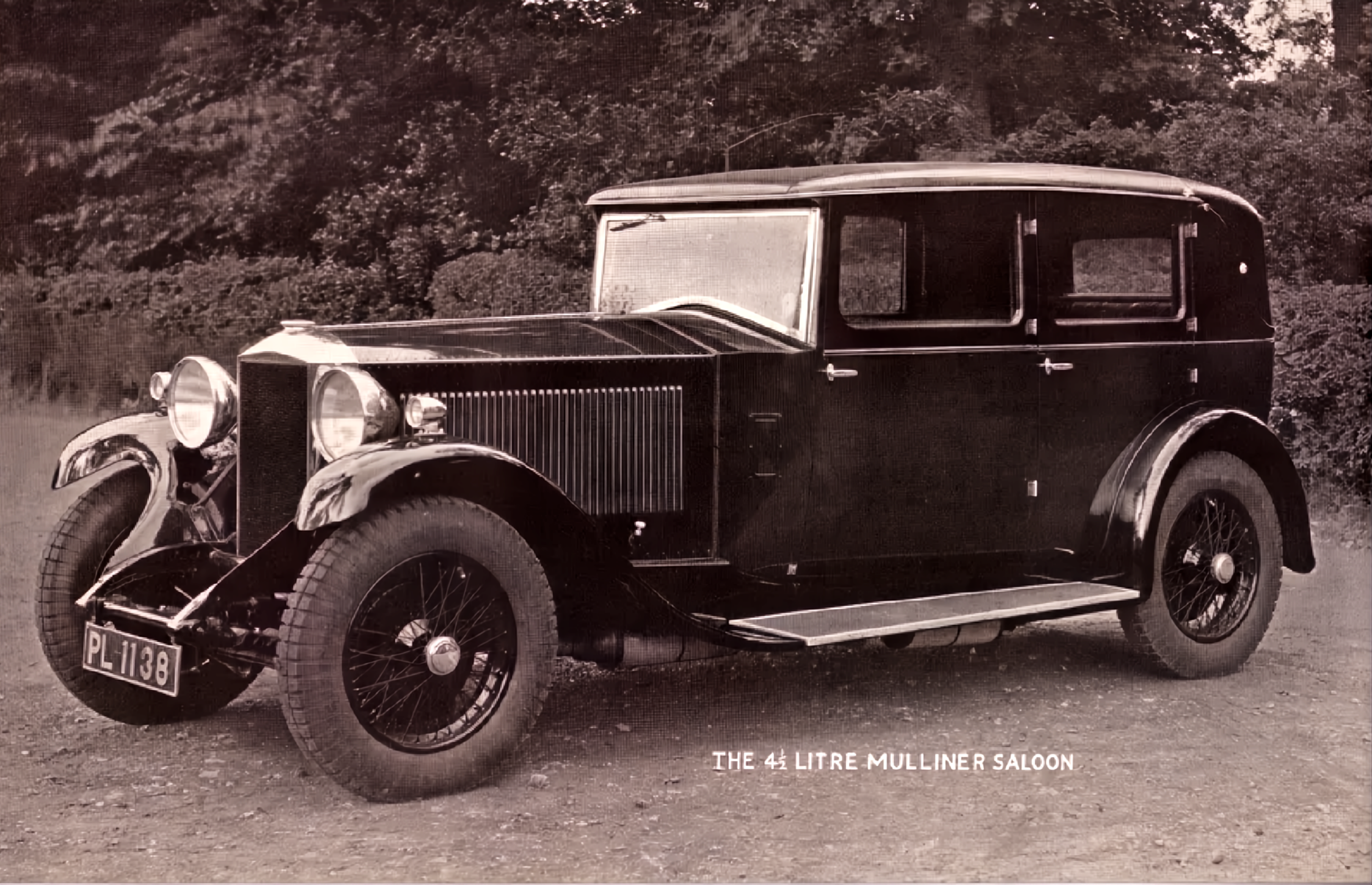
Instruments.—All instruments are grouped on an instrument panel with concealed lighting and consists of large diameter engine revolution indicator, large diameter speedometer, clock, petrol gauge, oil gauge, water temperature gauge, and supercharger pressure gauge. The rest of the instruments, as per standard 4½-litre.

Chassis, with bonnet, spare wheel and tyre, 5 lamps and kit of tools.

Price, delivery at Works **£1,875**

Chassis, fitted with 2-door, 4-seater sports body of special racing construction, complying with the International racing regulations. Folding forward windscreen with Triplex glass. Separately adjustable front seats. Leather upholstery. All bright parts chromium plated. Electric windscreen wiper. Spare wheel at rear.

Price, delivery at Works **£2,250**



THE 4½ LITRE MULLINER SALOON

THE 4½ LITRE SPORTS TOURER

PRICES

4½ Litre Standard and Sports Models

STANDARD MODEL

Chassis, including bonnet and five lamps, spare wheel and tyre, luggage carrier and kit of tools

Price, delivery at Works **£680 0 0**

Chassis, fitted with half panelled, four-door, four-light Saloon body of the very latest design with sliding roof. Cellulosed dark blue with black wings and chassis. All windows fitted with safety glass. Interior upholstered in leather, pockets to three doors. Pile carpet on floor, folding arm rest to rear seats, adjustable backs to sliding front seats, interior light fitted in roof and blind to rear window controlled from driver's seat. Capacious cubby holes adjacent to instrument panel. Interior woodwork mahogany finish. Windscreen wiper, interior mirror, spare wheel and tyre and luggage grid.

Price, delivery at Works **£795 0 0**

SPORTS MODEL

Chassis, including bonnet and five lamps, spare wheel and tyre and kit of tools.

Price, delivery at Works **£750 0 0**

Chassis, fitted with four seater coachbuilt touring body painted black with blue wings and valences, blue leather upholstering, black twill hood, hood bag and tonneau cover, Triplex glass windscreen, all bright parts chromium plated.

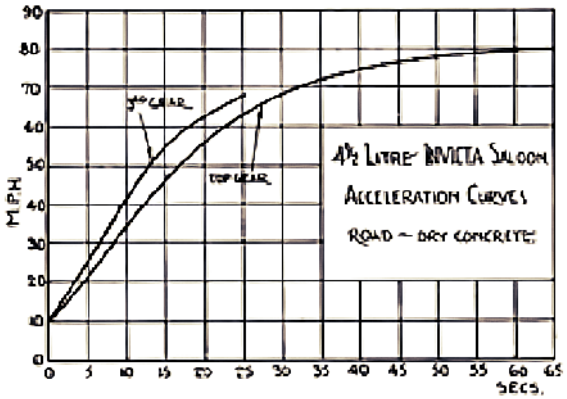
Price, delivery at Works **£875 0 0**

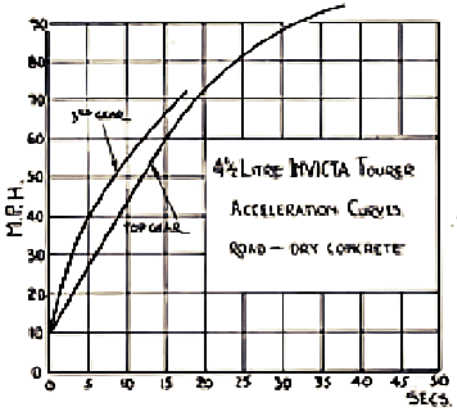
Sports Extras.

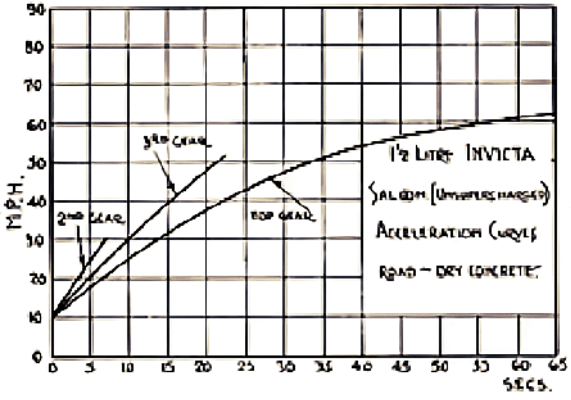
Special Exterior Colours	**£5 0 0**
Special Interior Upholstery	**£6 0 0**
Second Spare Wheel, Tyre and Carrier	**£14 3 6**
Stove Enamelling Wheels Special Colour Per Wheel	**£1 0 0**
Front Dumb-iron Shield	**£3 15 0**
Forward Folding Windscreen	**£2 0 0**
Side Curtains	**£10 10 0**
Spring Spoke Steering Wheel (fitting extra) ..	**£3 15 0**

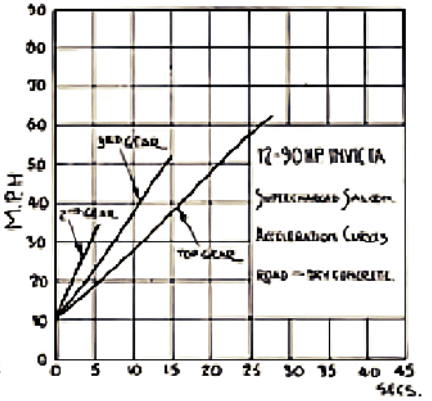
ACCELERATION and BRAKING CURVES of INVICTA MODELS

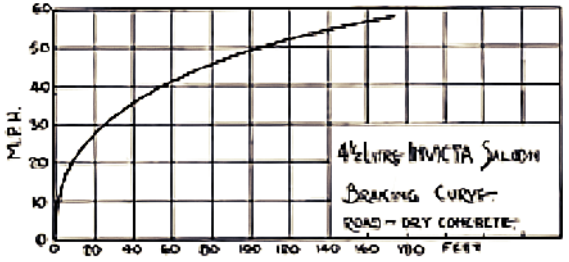
Reproduced from "The Motor" and "The Autocar"

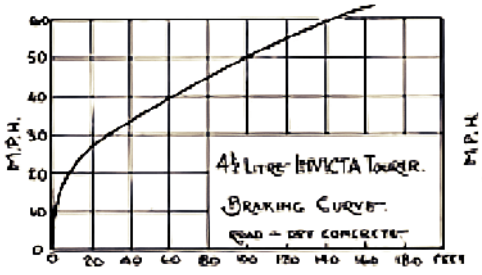


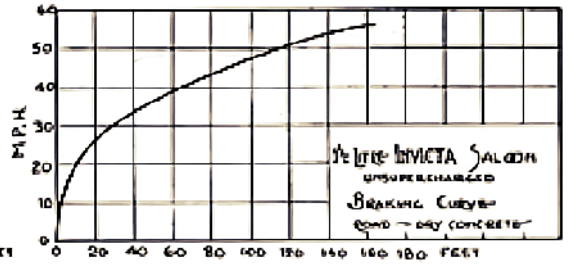


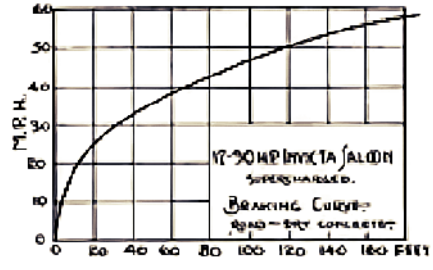












SPECIFICATION

The 12/45 h.p. (1½ Litre) and 12/90 h.p. (1½ Litre) Supercharged Chassis

Chassis Frame.—Specially deep channel section braced by five cross members. Side members upswept over front axle, underslung beneath rear axle. Wheelbase 9 ft. 10 in., track 4 ft. 8 in. Overall length 13 ft. 10 in.

Engine.—Six cylinders bore 57 m.m. Stroke 97.9 m.m. (1498.9 c.c.) R.A.C. rating 12.09 horse-power. Tax £12 per annum. Overhead valves and camshaft. Cylinder head can be lifted for cleaning without disturbing valve timing. Four bearing crankshaft, journals and roller bearings of exceptional diameter. Vibration damper fitted to crankshaft. Steel connecting rods. Die cast aluminium pistons. Coil ignition. Down draft carburettor. Water circulation by pump, temperature controlled by R.P. adjustable thermostat. Forced lubrication throughout by gear-type oil pump, with oil cleaner in base, which can be cleaned without removing sump. Fuel supplied to carburettor by electric pump. Capacity of petrol tank 13 gallons.

Gear-box.—Four forward speeds and reverse, silent third speed, Central gate change lever. Gear ratios, top 6 to 1, third 8.15 to 1, second 12 to 1, first 22.9 to 1.

Clutch.—Single dry plate of very robust design. Automatic lubrication of clutch plate splines.

Propeller Shaft.—All metal enclosed oil tight universal joints at each end, with steady bearing and another universal joint in centre of shaft.

Rear Axle.—Semi-floating, with exceptionally strong half-shafts, and spiral bevel silent gear.

Front Axle.—Extra strong H. section beam.

Springs.—Exceptionally long semi-elliptic springs mounted at rear as close to the wheels as possible. Fixed ends mounted in Silentbloc. Free ends sliding in bronze trunnions with very large bearing surfaces, giving the finest springing of any light car in the world.

Shock-absorbers.—" Hartford " Duplex Front and Rear.

Brakes.—Four wheel braking system direct operating from foot pedal on to 14 in. diameter drums fitted with aluminium cooling fins. Each drum fitted with its own adjustment. Hand brake interconnected with foot system and operating on all wheels.

Radiator.—Mounted on Silentblocs to ensure freedom from shock and distortion.

Steering.—Latest type " Marles " fitted with 17 in. diameter steering wheel. Ignition, carburettor control and lighting switches together with horn and starter switch located in centre of wheel.

Facia Board.—Fitted with clock, speedometer, oil gauge, thermometer, ammeter, petrol gauge, dynamo fuse, two pin plug socket, ignition switch, panel light switch, ignition switch warning lamp. Electric petrol pump switch.

Electrical Equipment.—12 Volt single pole system, switch and dip head lamps, two side lamps, combined tail stop, and reversing light. Electric starter and dynamo, 50 amp. hour battery. Electric windscreen wiper.

Wheels and Tyres.—Five Rudge-Whitworth wire wheels with racing type lock nuts. Tyres 29 in. × 5 in.

Finish.—All bright parts chromium-plated.

Coachwork.—Four door, four light, five seater metal panelled Saloon with fabric top, adjustable front bucket seats, Triplex glass, cellulose finish, leather upholstery, luggage compartment at rear integral with body. Overall length 13 ft. 10 in., width 5 ft. 6 in., height 5 ft. 1 in.

Four door, four seater metal panelled Tourer, adjustable front bucket seats, Triplex glass, cellulose finish, leather upholstery, luggage compartment at rear integral with body. One-man hood and rigid side curtains. Overall length 13 ft. 10 in., width 5 ft. 6 in.

The specification of the 12/90 h.p. is identical with that of the 12/45 h.p. with the following additions or modifications :—

Powerplus Supercharger attached by special bearer to frame in front of radiator and coupled by flexible coupling direct to crankshaft.

Special finned aluminium induction manifold connected through the radiator to elbow on supercharger.

Single horizontal carburettor fitted direct to body of supercharger.

Additional starting carburettor fitted to induction manifold.

Special low compression pistons.

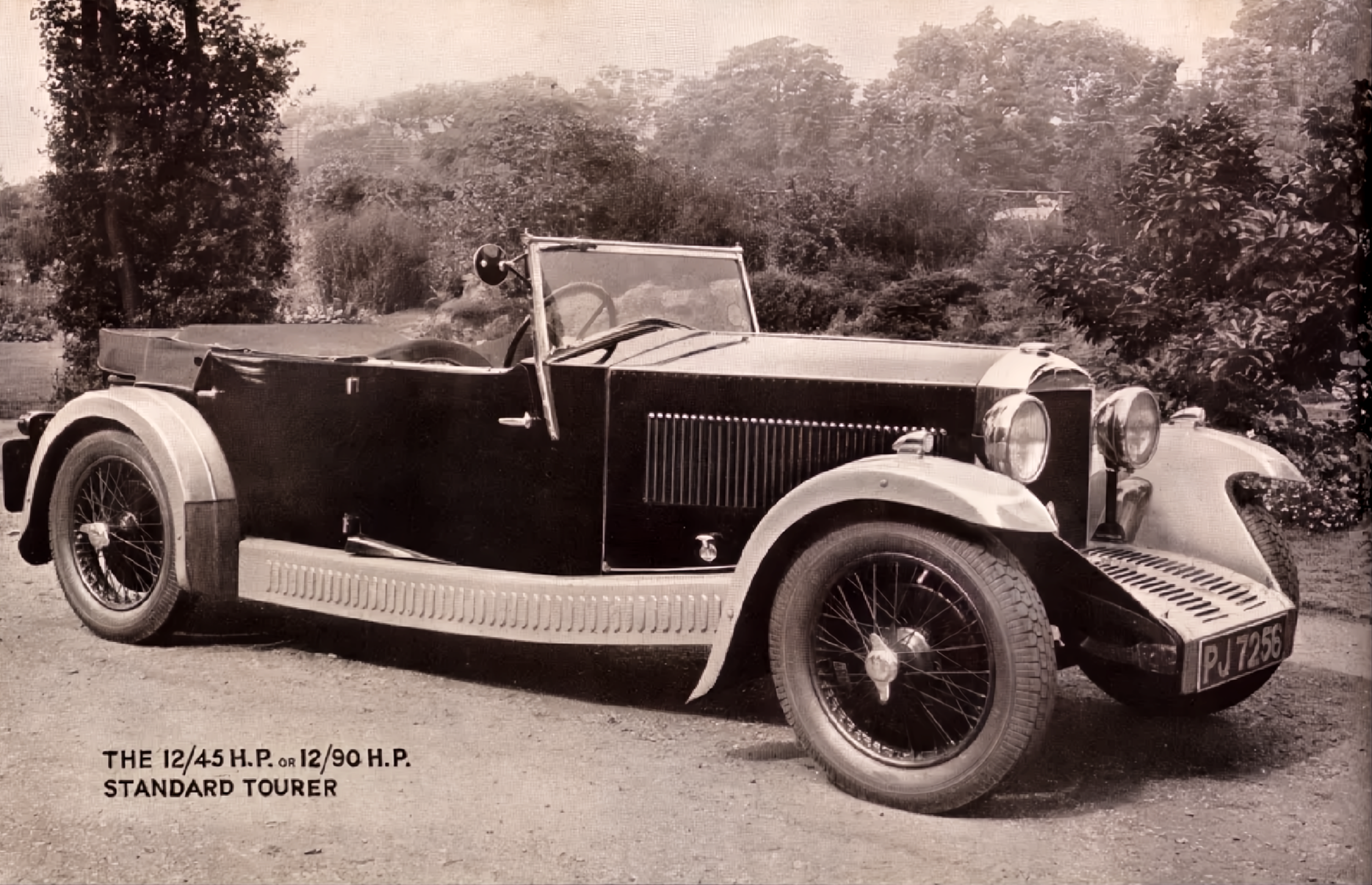
Supercharger pressure gauge on dashboard.

Specially strong 5.1 to 1-ratio back axle centre.

Twin Autopulse petrol pump.

Special flexible petrol and oil supply pipes to carburettor and supercharger.

THE 12/45 H.P. OR 12/90 H.P.
STANDARD 5 SEATER SALOON



THE 12/45 H.P. OR 12/90 H.P.
STANDARD TOURER

PRICES

12/45 h.p. Model and 12/90 h.p. Supercharged Model

12/45 h.p. (1½ Litre Models)

Chassis, including bonnet, five lamps, spare wheel and tyre, and kit of tools.
Price, delivery at Works **£335 0 0**

Chassis, fitted with four-door, four-seater coachbuilt touring body, with luggage compartment integral at rear, cellulose painted black, with blue wings and valances, blue leather upholstery, black twill hood, hood bag, Triplex glass windscreen, all bright parts chromium plated, separately adjustable front seats, electric windscreen wiper, spare wheel at rear.
Price, delivery at Works **£399 0 0**

Chassis, fitted with half-panelled, four-door, four-light, five-seater saloon body, with luggage compartment integral at rear, of the very latest design, cellulose painted dark blue, with black wings, chassis parts, and roof covering, interior upholstered in leather, pockets to all doors, cubby holes fitted to interior of rear quarters, pile carpet on floor, interior roof light, and blind to rear window controlled from driver's seat, two cubby holes with doors in instrument board facia, separately adjustable front seats, all interior polished woodwork in walnut ; Triplex glass throughout, interior mirror and electric windscreen wiper, all doors can be locked, spare wheel at rear.
Price, delivery at Works **£435 0 0**

12/90 h.p. (1½ Litre) Supercharged Models

Chassis, including bonnet, five lamps, spare wheel and tyre, and kit of tools.
Price, delivery at Works **£435 0 0**

Chassis, fitted with four-door, four-seater coach-built touring body, with luggage compartment integral at rear, cellulose painted black, with blue wings and valances, blue leather upholstery, black twill hood, and hood bag, Triplex glass windscreen, all bright parts chromium plated, separately adjustable front seats, electric windscreen wiper, spare wheel at rear.
Price, delivery at Works **£498 0 0**

Chassis, fitted with half-panelled, four-door, four-light, five-seater saloon body, with luggage compartment integral at rear, of the very latest design, cellulose painted dark blue, with black wings, chassis parts, and roof covering, interior upholstered in leather, pockets to all doors, cubby holes fitted to interior of rear quarters, pile carpets on floor, interior roof light, and blind to rear window controlled from driver's seat, two cubby holes with doors in instrument board facia, separately adjustable front seats, all interior polished woodwork in walnut, Triplex glass throughout, interior mirror and electric windscreen wiper, all doors can be locked, spare wheel at rear.
Price, delivery at Works **£535 0 0**

Chassis, with Wilson pre-selective, silent four-speed gear-box as standard, and fitted with a De Luxe half-panelled, four-door, four-light, five-seater saloon body, with luggage compartment integral at rear, with sliding roof, cellulose painted in special colour, and upholstered in special coloured leather, with pile carpets, safety glass louvres to all doors, centrally operated opening windscreen, central arm rest to rear seats, interior driving mirror, and blind to rear window, operated from driver's seat, Triplex glass throughout, interior polished woodwork in walnut, two electric windscreen wipers, ladies' and smokers companions fitted to rear quarters, ashtray and wireless cigar lighter on instrument board facia, all doors can be locked, spare wheel at rear.
Price, delivery at Works **£575 0 0**

Extra accessories are quoted in full detail in our complete Catalogue

SPECIFICATION AND PRICES

12/100 H.P. (1½ Litre) and 14/120 H.P. Supercharged Sports Model

Chassis Frame.—Very deep channel section, side members braced by five cross members, and in the centre a deep channel section cruciform cross bracing member. The side members are slightly upswept over the front axle, and passed beneath the rear axle without bends. Wheelbase 9 ft. 4 in. Track 4 ft. 8 in. Overall length 13 ft. 5 in.

Engine.—Six cylinders 57 m.m. bore. Stroke 97.9 m.m., 1,498 c.c. R.A.C. rating 12.09 H.P. Tax £12 per annum. Two overhead camshafts operating inclined valves through rockers. Cylinder head can be lifted for cleaning without disturbing the valve timing, and also the cylinder block can be removed without disturbing the valve timing. 14 m.m. plugs. Cylinder head holding down studs are on the exterior of the engine and can be tightened up without disturbing any part of the engine. Very stiff four bearing crankshaft completely machined all over, fitted with vibration damper at the front end. The supercharger is mounted directly on the front end of the crankcase, and is fed by an S.U. carburettor. Easy starting is obtained by means of the special starting carburettor fitted to the inlet pipe into which is also fitted two explosion valves. Ignition operated by coil. Water circulation by pump, and water temperature controlled by an adjustable thermostat which is by-passed until the engine obtains correct working temperature. Light alloy connecting rods and die cast high duty aluminium alloy pistons. Lubrication by high pressure oil pump, with oil cleaner in base. The oil drawn from a very large capacity, well ribbed sump, capacity of the sump being 2 gallons. Fuel supplied to carburettor by electric pump. Capacity of petrol tank 15 gallons. This model is also available without extra charge with an engine of 60 m.m. bore by 97.9 m.m. stroke, 1,660 c.c. (R.A.C. rating 13.39). Tax £14 per annum.

Gear-box.—The Wilson pre-selective gear-box is used giving instantaneous gear change on all gears. The gear ratios are :—

Top 4.2 to 1.	3rd 5.7 to 1.
2nd 8.4 to 1.	1st and also reverse gear 15.3 to 1.

Entirely automatic self-lubrication by its own oil pump. Change speed lever mounted below steering wheel.

Propeller Shaft.—A large diameter propeller shaft fitted with all metal enclosed oil-tight Universal joints.

Rear Axle.—Semi-floating, with exceptionally strong half-shafts, and Silent spiral bevel final drive, the gear ratio being 4.2 to 1.

Front Axle.—Specially designed H. section beam.

Springs.—The front and rear semi-elliptic springs are flat under load, and are mounted on the outside of the frame. The front springs are not subjected to brake torque reaction, which is absorbed in special torque rods fitted below the chassis frame. The free ends of the springs slide on special hangers which are fitted with a safety bolt. The bearing surfaces both in the trunnion and the slide being of exceptional area.

Shock-Absorbers.—Special Hartford single arm shock-absorbers are fitted front and rear.

Brakes.—A specially designed system of Lockheed Hydraulic Brakes are fitted, working on to special 14 in. diameter brake drums, which are fitted with cooling fins. Provision is made for an air stream to pass over the brake cylinders, thus providing adequate cooling of the operating fluid. The four brakes are controlled by the foot pedal, and the hand brake is interconnected with the foot system and operating on all four wheels. By a special arrangement the hand brake can be used as a parking brake without putting the hydraulic system under pressure and operates on the two rear wheels.

Radiator.—A special high efficiency new designed radiator is used, the mounting ensuring freedom from shock and distortion.

Steering.—The latest type "Markes" fitted with 17 in. "Ashby Brooklands" steering wheel in the centre of which are ignition, carburettor control, and lighting switches, together with horn and starter switch.

Facia Board.—Fitted with large diameter engine revolution counter with non-reset maximum hand; large diameter speedometer, oil gauge, water temperature thermometer, ammeter, petrol gauge, clock and supercharger pressure gauge. Also on the instrument board is the dynamo fuse, two pin plug charging socket, ignition switch, panel light switch, ignition warning lamp, electric petrol pump switch and starting carburettor control.

Electrical Equipment.—12 volt single pole system, switch and dip long range head lamps. Two side lamps. Combined tail stop and reversing light. Electric starter and dynamo and 50 amp. hour battery. Electric windscreen wiper.

Wheels and Tyres.—Five Rudge-Whitworth wire wheels with knock-off lock nuts fitted with 28 × 5.50 tyres.

Finish.—All bright parts are chromium plated with the exception of the instrument bezels which are black finished in order to avoid reflected glare.

Coachwork.—Specially designed extra lightweight four-seater Vanden Plas open body, fitted with folding screen. Triplex glass hood.

12/100 h.p. (1½ Litre) Supercharged Sports Model

Chassis, with bonnet, spare wheel and tyre, five lamps and kit of tools. Price, delivery at Works	£645	0 0
Chassis, as above, with 14/120 h.p. engine, 60 m.m. bore by 97.9 m.m. stroke, 1,660 c.c. (R.A.C. rating 13.39), with bonnet and spare wheel and tyre, five lamps, and kit of tools. Price, delivery at Works	£645	0 0
Chassis, fitted with two-door, four-seater sports body, complying with International racing regulations, folding forward windscreen, with Triplex glass, separately adjustable front seats, leather upholstery, electric windscreen wiper, all bright parts chromium plated, spare wheel at rear. Price, delivery at Works	£750	0 0